Google™
10

Connecting your Enterprise Applications

with Google Docs & Sites

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Google

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Memeo

5/20/2010

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http://bit.ly/bp2sTC

Google 10 I/O

Welcome

Today

Documents List Data API

Google Data (APIs) Protocol

Sites Data API

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Google Data Protocol

20 Data APIs and counting...

Google Analytics Data Export API

Google Apps APIs

Google Base Data API

Blogger Data API

Google Booksearch Data API

Google Calendar Data API

Google Code Search Data API

Google Contacts Data API

Google Documents List Data API

Google Finance Portfolio Data API

Google Health Data API

Google Maps Data API

Picasa Web Albums Data API

Google Sidewiki Data API

Google Sites Data API

Google Spreadsheets Data API

Google Webmaster Tools Data API

YouTube Data API

The Protocol

- HTTP, RESTful, ETags
  - GET/POST/PUT/DELETE (e.g. full CRUD)
  - PATCH (or your own verbs)

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The Protocol

- HTTP, RESTful, ETags
  - GET/POST/PUT/DELETE (e.g. full CRUD)
  - PATCH (or your own verbs)
- ATOM Publishing Protocol, XML, JSON
- Extends ATOM:
  - authz
  - (
  - OAuth) for desktop/mobile/web apps
  - data model (**<gd:lastModifiedBy>**)
  - batch operations
  - formats: **json**, **json-in-script**, **rss**, **jsonc**
  - partial retrieval/update of data
  - versioning: **GData-Version: 3.0**

Client Libraries

.NET Java

Objective-C

So what can you build with them...?

Anything!

Why Docs & Sites?

Document List Data API

(aka DocList API, Google Docs API)

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API Features: last year's Google I/O

- Folder management
- Sharing (ACLs) @ user level, **<gd:writersCanInvite>**
- Metadata: **<gd:lastViewedBy>**, **<gd:lastModifiedBy>**
- Download docs (export in multiple formats)
- Advanced queries:
  - who: **/-/shared-with-domain**, **/-/mine**, **/-/viewed**, **owner**, **writer**, **reader**
  - what: **/-/folder**, **/-/hidden**, **/-/private**
  - where: **showfolders**, **showdeleted**
  - when: **orderby**, **opened-min**, **opened-max**
- ...

Version 3.0

v3.0 Features

- Structured XML error reporting
- Metadata++: **<gd:quotaBytesUsed>**
- Additional parameters for sync clients: **edited-min|max**
- Native PDF upload/download
- Revision History
- Shared Folders
- Domain / Group-level sharing
- Permanently deleting documents
- More RESTful feed URIs

40+% faster!

Launched since v3.0:

- OCR on jpg/png uploads
- translation on upload
- copy command
- change owner
- publishing documents
- root folder operations
- resumable upload
- metadata/user features feed
- upload any file!!

- Google Apps Scripts (http://bit.ly/docs-apps-script)

Feeds

https://docs.google.com/feeds/

Feeds

https://docs.google.com/

Documents List Feed: **/feeds/default/private/full/[*resourceID*]**
GET, POST, PUT, DELETE

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Media Feed: **/feeds/default/media/*resourceID***
PUT

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ACL Feed: **/feeds/default/private/full/*resourceID*/acl**
GET, POST, PUT, DELETE

Media Feed: **/feeds/default/media/*resourceID***
PUT

Revisions Feed: **/feeds/default/private/full/*resourceID*/revisions**
GET

Feeds

https://docs.google.com/

Documents List Feed: **/feeds/default/private/full/[*resourceID*]**
GET, POST, PUT, DELETE

ACL Feed: **/feeds/default/private/full/*resourceID*/acl**
GET, POST, PUT, DELETE

Media Feed: **/feeds/default/media/*resourceID***
PUT

Revisions Feed: **/feeds/default/private/full/*resourceID*/revisions**
GET

Folder Contents: **/feeds/default/private/full/*resourceID*/contents**
GET, POST, DELETE

Feeds

https://docs.google.com/

Documents List Feed: **/feeds/default/private/full/[*resourceID*]**
GET, POST, PUT, DELETE

ACL Feed: **/feeds/default/private/full/*resourceID*/acl**
GET, POST, PUT, DELETE

Media Feed: **/feeds/default/media/*resourceID***
PUT

Revisions Feed: **/feeds/default/private/full/*resourceID*/revisions**
GET

Folder Contents: **/feeds/default/private/full/r*esourceID*/contents**
GET, POST, DELETE

Export Feed: **/feeds/download/documents/Export?...**
GET

Feeds

https://docs.google.com/

Documents List Feed: **/feeds/default/private/full/[*resourceID*]**
GET, POST, PUT, DELETE
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GET, POST, PUT, DELETE
Media Feed: **/feeds/default/media/*resourceID***
PUT
Revisions Feed: **/feeds/default/private/full/*resourceID*/revisions**
GET
Folder Contents: **/feeds/default/private/full/r*esourceID*/contents**
GET, POST, DELETE
Export Feed: **/feeds/download/documents/Export?...**
GET**Metadata Feed**: **/feeds/metadata/default**
GET

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Advanced Features

Document Translations

Special Features

- On document upload
- If omitted, **sourceLanguage** will be inferred.

POST /feeds/default/private/full
?sourceLanguage=en&targetLanguage=de

Upload any file

Special Features

- Upload any file type to Google Docs
- Default: doc files are converted to (editable) Google Docs
- Can preserve native format (100% fidelity) with **?convert=false**
- Take up quota. Converted docs do not.
- API access is limited to Google Apps Premier domains.

Max 1GB file upload

1GB total storage (with ability to purchase more)

[**O**]ptical [**C**]haracter [**R**]ecognition

Special Features

- Available on .jpg/.png/.gif uploads

- Limitations:
  - computationally expensive: ~30s to complete
  - requires high resolution images: ~10 pixel character height
  - latin character set
  - higher quota for Google Apps users

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  - requires high resolution images: ~10 pixel character height
  - latin character set
  - higher quota for Google Apps users

```
POST /feeds/default/private/full?ocr=true HTTP/1.1
Host: docs.google.com
Authorization: OAuth oauth_consumer_key=example.com...
GData-Version: 3.0
Content-Length: 1984
Content-Type: image/png
Slug: Document Title

... <image contents here> ...
```

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OCR Demo

Logout from Google Docs

This example application showcases the OCR feature of the Documents List Data API. It allows you to upload an image and start an OCR operation on it. The extracted text is converted into a new Google Document.

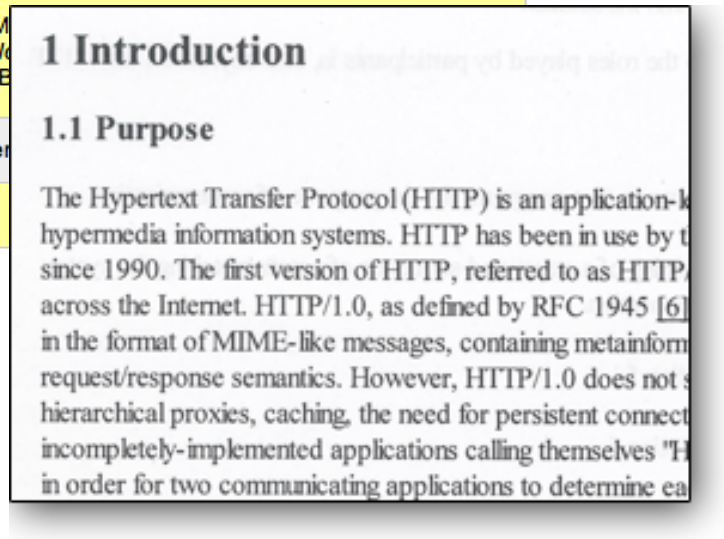
Please choose a JPG, GIF, or PNG to be OCR'ed.

Please note that the operation can currently take up to 40 seconds.

A number of limitations:

- *Files must be fairly high-resolution* -- rule of thumb is 10 pixel character height.
- *Maximum file size*: 10M
- *The larger the file, the l*
  ~15s, 2MB: ~40s, 10MB

Choose File No file chose



1 Introduction

1.1 Purpose

The Hypertext Transfer Protocol (HTTP) is an application-l
hypermedia information systems. HTTP has been in use by t
since 1990. The first version of HTTP, referred to as HTTP/
across the Internet. HTTP/1.0, as defined by RFC 1945 [6]
in the format of MIME-like messages, containing metainform
request/response semantics. However, HTTP/1.0 does not s
hierarchical proxies, caching, the need for persistent connect
incompletely-implemented applications calling themselves "H
in order for two communicating applications to determine ea

Lib: PHP (Zend)

Auth: AuthSub

Feature: OCR

http://googlecodesamples.com/docs/php/ocr.php

* Screenshot from: http://googlecodesamples.com/docs/php/ocr.php

Metadata Feed

Advanced Features

- Feature discovery

```
POST /feeds/metadata/default HTTP/1.1
Host: docs.google.com
Authorization: <your authorization header here>
GData-Version: 3.0

<entry xmlns="http://www.w3.org/2005/Atom">
  ...
  <gd:quotaBytesTotal>1073741824</gd:quotaBytesTotal>
  <gd:quotaBytesUsed>378374</gd:quotaBytesUsed>
  <docs:quotaBytesUsedInTrash>0</docs:quotaBytesUsedInTrash>
  <docs:feature>
    <docs:featureName>ocr</docs:featureName>
  </docs:feature>
  <docs:feature>
    <docs:featureName>upload_any</docs:featureName>
  </docs:feature>
  <docs:maxUploadSize kind="document">512000</docs:maxUploadSize>
  <docs:maxUploadSize kind="spreadsheet">1048576</docs:maxUploadSize>
  <docs:maxUploadSize kind="pdf">1048576000</docs:maxUploadSize>
  <docs:maxUploadSize kind="file">1048576000</docs:maxUploadSize>
</entry>
```

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Metadata Feed

Advanced Features

- Feature discovery

```
POST /feeds/metadata/default HTTP/1.1
Host: docs.google.com
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<entry xmlns="http://www.w3.org/2005/Atom">
  ...
  <gd:quotaBytesTotal>1073741824</gd:quotaBytesTotal>
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  <docs:feature>
    <docs:featureName>ocr</docs:featureName>
  </docs:feature>
  <docs:feature>
    <docs:featureName>upload_any</docs:featureName>
  </docs:feature>
  <docs:maxUploadSize kind="document">512000</docs:maxUploadSize>
  <docs:maxUploadSize kind="spreadsheet">1048576</docs:maxUploadSize>
  <docs:maxUploadSize kind="pdf">1048576000</docs:maxUploadSize>
  <docs:maxUploadSize kind="file">1048576000</docs:maxUploadSize>
</entry>
```

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Resumable Upload

Advanced Features

- Recommended upload path for large arbitrary file uploads.
- Normal upload max is ~250MB. Resumable has no limit.
- Upload process:
  1. Client makes POST request to initiate a resumable upload request.
  2. Upload each file chunk to the unique upload URI
- Client library support

Resumable Upload

Protocol

```
POST /feeds/upload/create-session/default/private/full HTTP/1.1
Host: docs.google.com
Authorization: <your authorization header here>
GData-Version: 3.0
Content-Length: 0
Slug: MyTitle
X-Upload-Content-Type: application/zip
X-Upload-Content-Length: 1234567

< empty body >
```

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Resumable Upload

Protocol

POST /feeds/upload/create-session/default/private/full HTTP/1.1
Host: docs.google.com
Authorization: <your authorization header here>
GData-Version: 3.0
Content-Length: 0
Slug: MyTitle
X-Upload-Content-Type: application/zip
X-Upload-Content-Length: 1234567

< empty body >

HTTP 200 OK
Location: < unique upload uri >

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Resumable Upload

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POST /feeds/upload/create-session/default/private/full HTTP/1.1
Host: docs.google.com
Authorization: <your authorization header here>
GData-Version: 3.0
Content-Length: 0
Slug: MyTitle
X-Upload-Content-Type: application/zip
X-Upload-Content-Length: 1234567

< empty body >

HTTP 200 OK
Location: < unique upload uri >

PUT <upload_uri> HTTP/1.1
Host: docs.google.com
Content-Type: application/zip
Content-Range: bytes 0-9999/1234567

< bytes 0-9999 >

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Resumable Upload

Protocol

POST /feeds/upload/create-session/default/private/full HTTP/1.1
Host: docs.google.com
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HTTP 200 OK
Location: < unique upload uri >

PUT <upload_uri> HTTP/1.1
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Content-Type: application/zip
Content-Range: bytes 0-9999/1234567

< bytes 0-9999 >

HTTP 308 Resume Incomplete
Content-Length: 0
Range: 0-99999

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Resumable Upload
Protocol

HTTP 201 Created

```
<entry xmlns='http://www.w3.org/2005/Atom'
      gd:etag='W/"CsNSadsfdfGUo."'>
  <title type='text'>MyTitle</title>
  <gd:quotaBytesUsed>1234567</gd:quotaBytesUsed>
  ...
</entry>
```

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Resumable Upload

Python

```
import os.path
import atom.data
import gdata.client
import gdata.docs.client
import gdata.docs.data

client = gdata.docs.client.DocsClient(source='yourCompany-yourAppName-v1')
# TODO: Authenticate with OAuth/AuthSub

f = open('test.mpg')
file_size = os.path.getsize(f.name)

uploader = gdata.client.ResumableUploader(
    client, f, 'video/mpeg', file_size, chunk_size=10485760,
    desired_class=gdata.docs.data.DocsEntry)

# Set metadata for our upload.
entry = gdata.docs.data.DocsEntry(title=atom.data.Title(text='My Video'))

new_entry = uploader.UploadFile(
    '/feeds/upload/create-session/default/private/full', entry=entry)

print 'Document uploaded: ' + new_entry.title.text
print 'Quota used: %s' % new_entry.quota_bytes_used.text
```

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```

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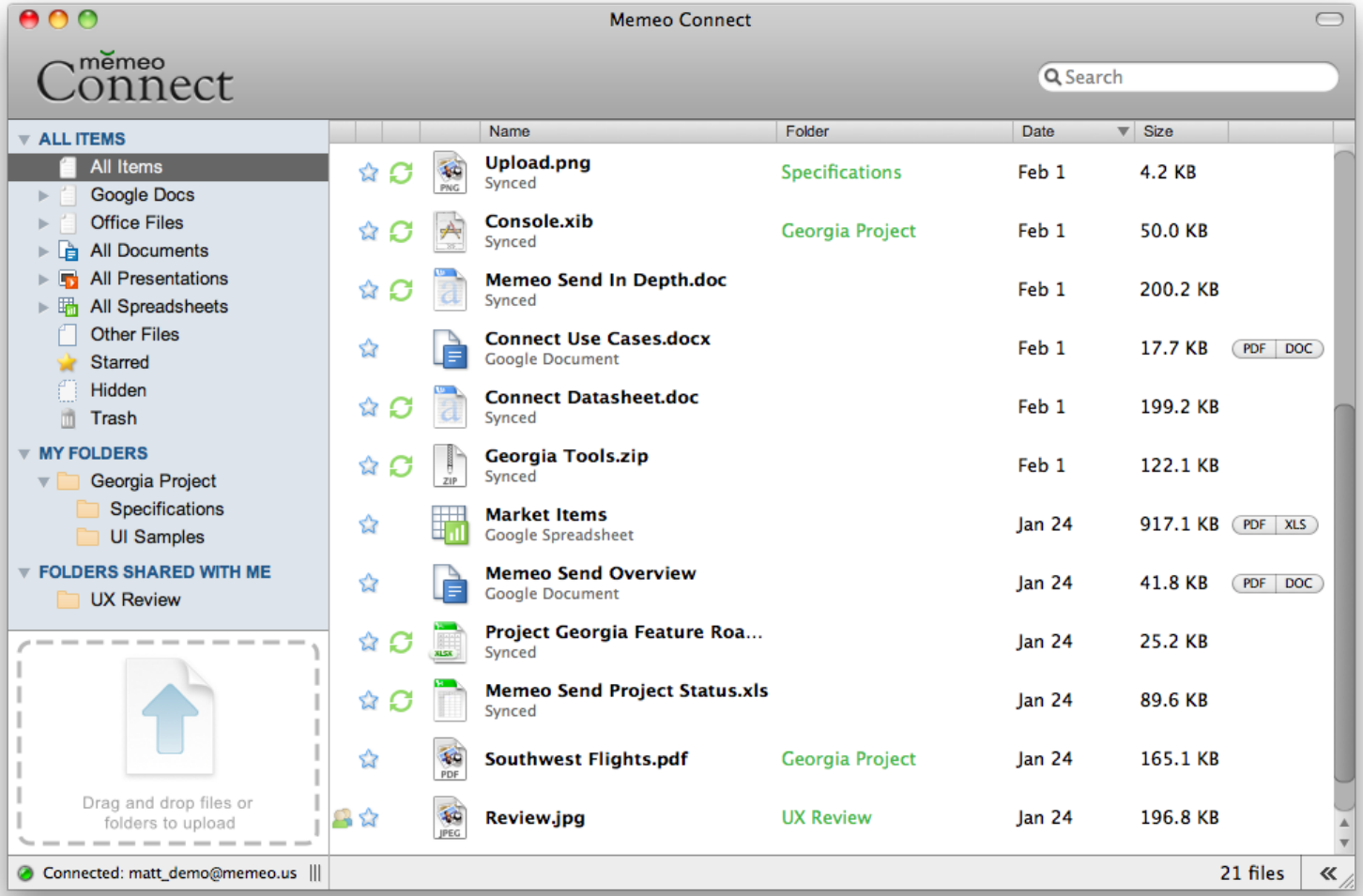
Memeo

Memeo Connect

What is it?

memeo Connect for Google Apps

- Bridges your Google Documents with your Desktop



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Building Memeo Connect

- The Challenge
  - Sync Sync Sync!
  - It's all about editing documents and getting updates
  - Need to handle collisions gracefully

Building Memeo Connect

- The Challenge
  - Sync Sync Sync!
  - It's all about editing documents and getting updates
  - Need to handle collisions gracefully

- Solution:
  - Etags
  - Document feeds
  - Parameters: updated-min|max

Memeo Connect

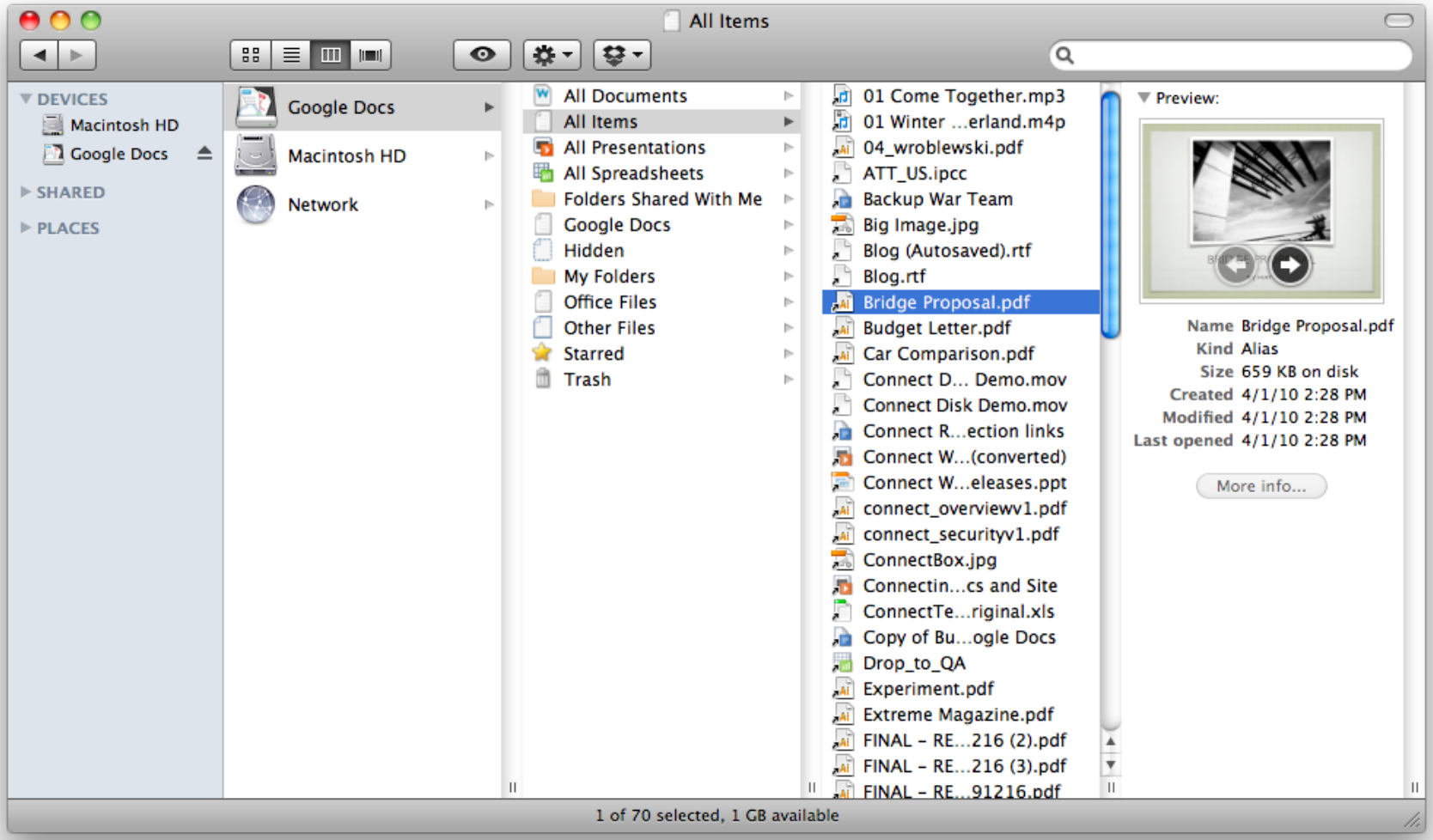
Tips & Tricks

- Google Docs is not a file hierarchy
- List size
  - Documents can be HUGE
  - Optimize feed requests
- Persistence
- Get Lazy
- Flexibility
- Informative UI
- Client Libraries Rock

Memeo Connect 2.0 Beta

memeo Connect for Google Apps

- Signup at http://www.memeoconnect.com/beta



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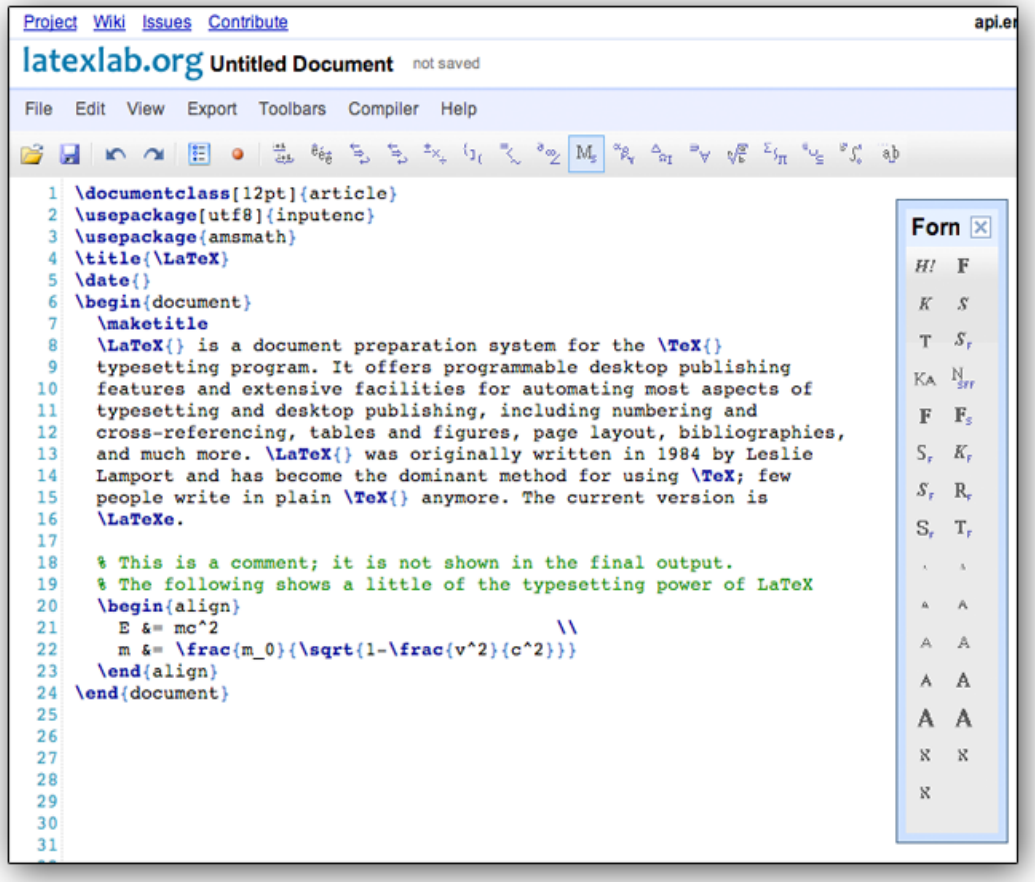
Demo

Google Docs Base Editor



docs.latexlab.org

Java library

Google Web Toolkit

App Engine

* Screenshot from: http://docs.latexlab.org, Developer: Bobby Soares

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Sites Data API

(aka Sites API)

Google I/O 10

View live notes and ask questions about this session on Google Wave

http://bit.ly/bp2sTC

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Features

- Create/modify, move, delete *all* site content
- Create new sites or copy existing ones
- Sharing permissions (ACLs)
- Revision History / Activity feed
- Attachments
- Page-level templates, Site-level templates
- Web address mappings (mysite.example.com -> https://sites.google.com/a/example.com/mysite)

- Gadgets
- Google Apps Scripts (http://bit.ly/sites-apps-script)

Feeds

https://sites.google.com/feeds/

Feeds

https://sites.google.com

Site Feed: **/feeds/site/{*domain*}**
GET, POST, PUT

Feeds

https://sites.google.com

Site Feed: **/feeds/site/{*domain*}**
GET, POST, PUT
Content Feed: **/feeds/content/{*domain*}/{*siteName*}**
GET, POST, PUT, DELETE

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https://sites.google.com

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GET, POST, PUT
Content Feed: **/feeds/content/{*domain*}/{*siteName*}**
GET, POST, PUT, DELETE
ACL Feed: **/feeds/acl/site/{*domain*}/{siteName}**
GET, POST, PUT, DELETE

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GET, POST, PUT
Content Feed: **/feeds/content/{*domain*}/{*siteName*}**
GET, POST, PUT, DELETE
ACL Feed: **/feeds/acl/site/{*domain*}/{siteName}**
GET, POST, PUT, DELETE
Activity Feed: **/feeds/activity/{*domain*}/{*siteName*}**
GET

Feeds

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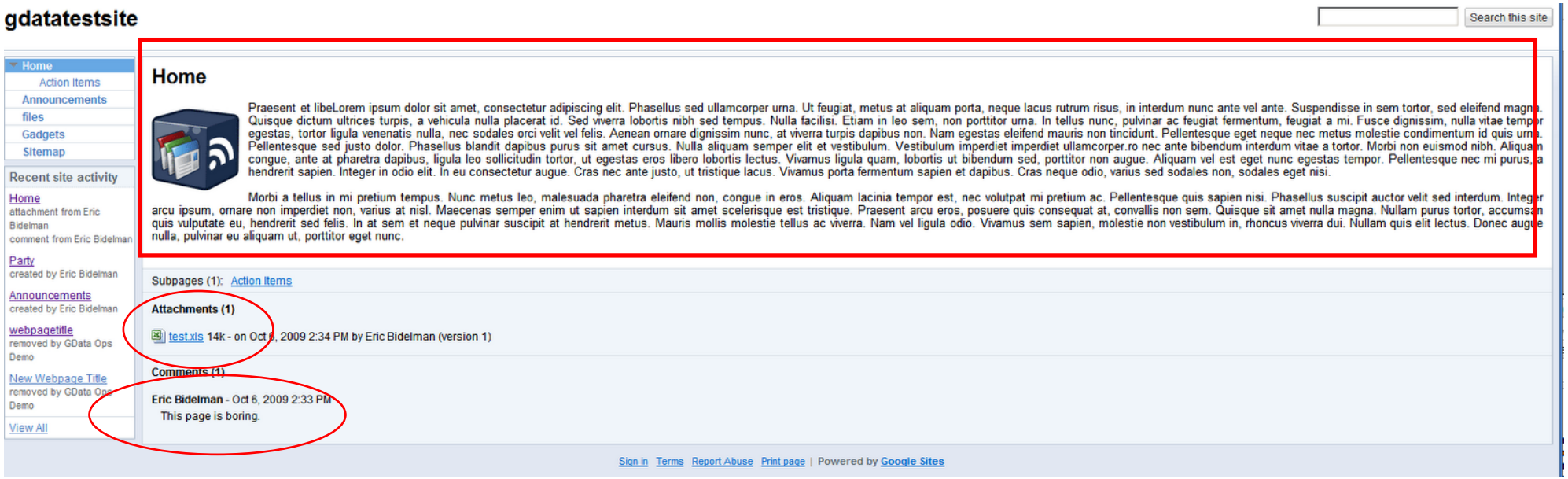
GET, POST, PUT, DELETE
Activity Feed: **/feeds/activity/{*domain*}/{*siteName*}**
GET
Revision Feed: **/feeds/revision/{*domain*}/{*siteName*}/*contentId***
GET

What kind of content?

https://sites.google.com/site/gdatatestsite/



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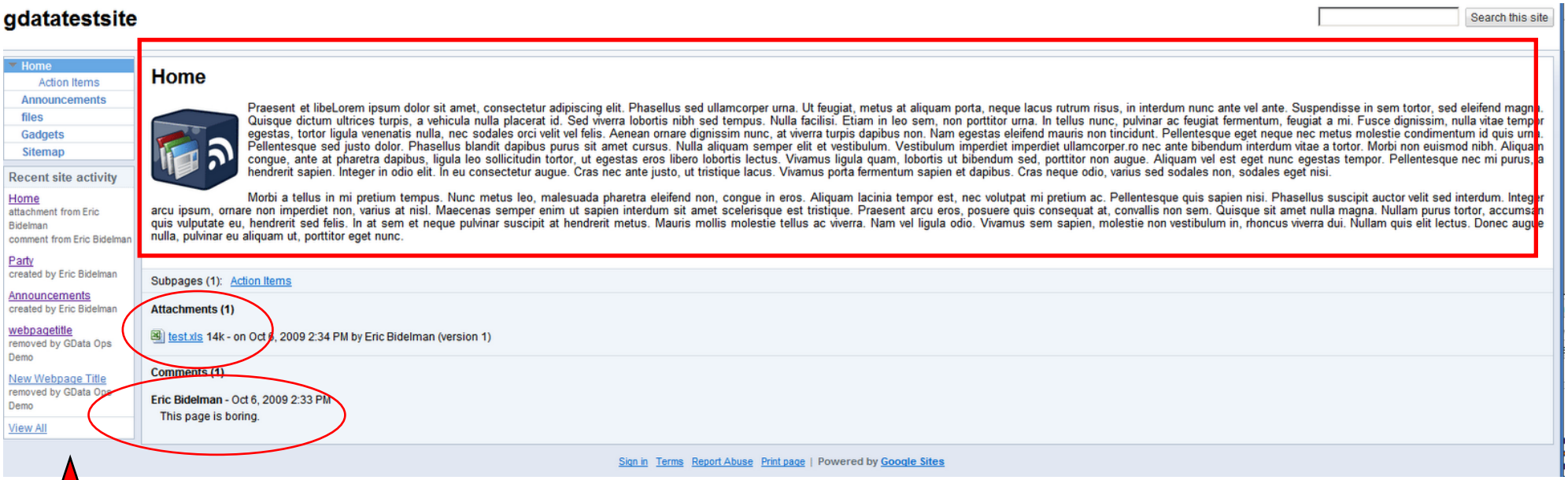

Activity

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What kind of content?

https://sites.google.com/site/gdatatestsite/

gdatatestsite

Search this site

Home
Action Items
Announcements
files
Gadgets
Sitemap

Recent site activity

Home
attachment from Eric Bidelman
comment from Eric Bidelman

Party
created by Eric Bidelman

Announcements
created by Eric Bidelman

webpagetitle
removed by GData Ops Demo

New Webpage Title
removed by GData Ops Demo

View All

Home

Praesent et libeLorem ipsum dolor sit amet, consecte
Quisque dictum ultrices turpis, a vehicula nulla place
egestas, tortor ligula venenatis nulla, nec sodales orc
Pellentesque sed justo dolor. Phasellus blandit dapib
congue, ante at pharetra dapibus, ligula leo sollicitud
hendrerit sapien. Integer in odio elit. In eu consectetur

Morbi a tellus in mi pretium tempus. Nunc metus lec
arcu ipsum, ornare non imperdiet non, varius at nisl. Maecenas sempe
quis vulputate eu, hendrerit sed felis. In at sem et neque pulvinar susci
nulla, pulvinar eu aliquam ut, porttitor eget nunc.

Subpages (1): Action Items

Attachments (1)

test.xls 14k - on Oct 6, 2009 2:34 PM by Eric Bidelman (version 1)

Comments (1)

Eric Bidelman - Oct 6, 2009 2:33 PM
This page is boring.

Home >

Action Items

Showing 2 items

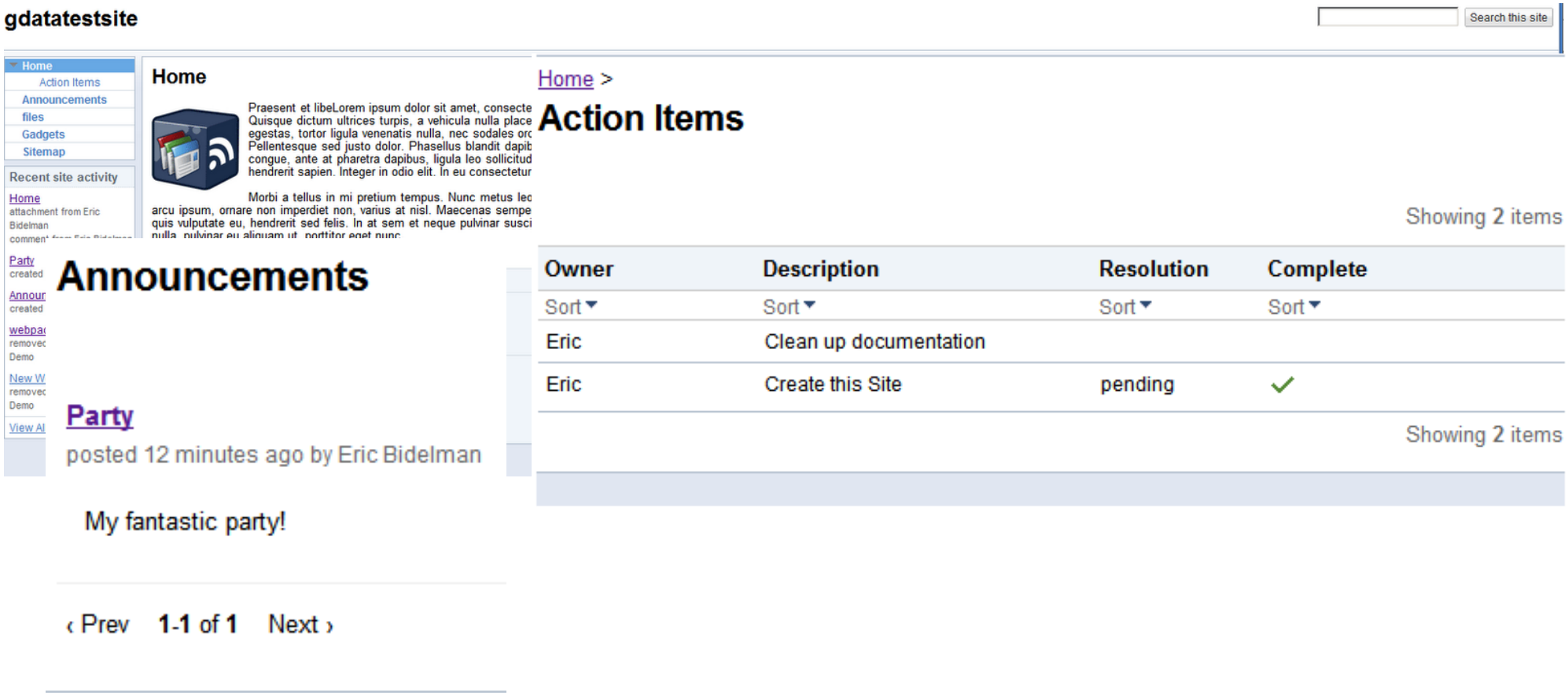
Owner	Description	Resolution	Complete
Sort	Sort	Sort	Sort
Eric	Clean up documentation		
Eric	Create this Site	pending	✓

Showing 2 items

Google I/O 10

What kind of content?

https://sites.google.com/site/gdatatestsite/



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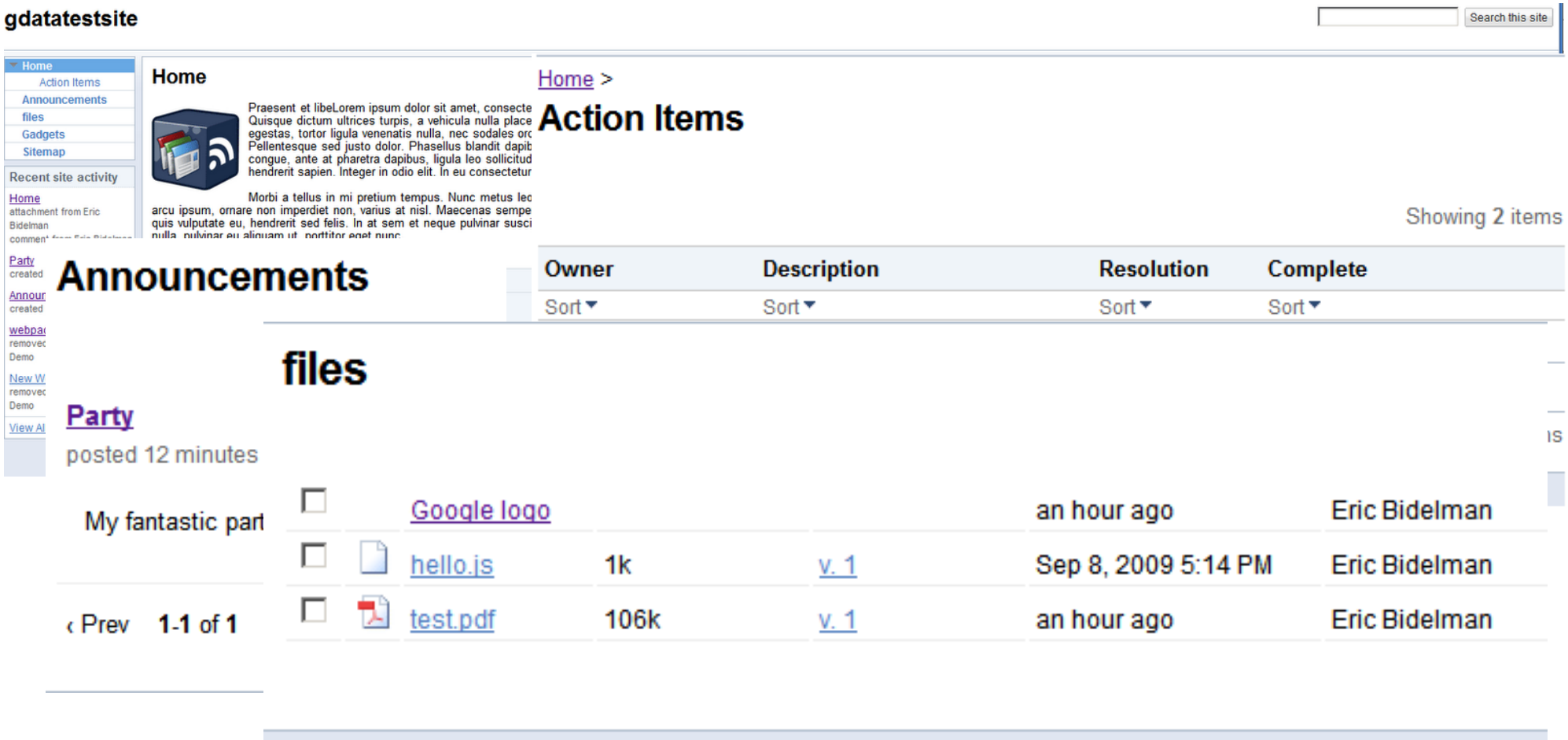

Creating Content

```
SiteService client = new SiteService("yourCo-yourAppName-v1");
// TODO: Use OAuth/AuthSub to gain authorization to user's data
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    "Title", "<b>Why doesn't the &lt;blink&gt; tag would work in Sites?</b>");
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  WebPageEntry entry = new WebPageEntry();

  // Set page content and title.
  XmlBlob xml = new XmlBlob();
  xml.setBlob(html);
  entry.setContent(new XhtmlTextConstruct(xml));
  entry.setTitle(new PlainTextConstruct(title));




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  URL contentFeedUrl = new URL(
    "https://sites.google.com/feeds/content/site/gdatatestsite");

  return client.insert(contentFeedUrl, entry);
}

WebPageEntry page = createWebPage(
    "Title", "<b>Why doesn't the &lt;blink&gt; tag would work in Sites?</b>");
```

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Fetching Content

https://sites.google.com/site/gdatatestsite/

GET /feeds/content/site/gdatatestsite?kind=webpage

GET /feeds/content/site/gdatatestsite?kind=webpage,listpage

http://sites.google.com/site/gdatatestsite/Home/todos:

GET /feeds/content/site/gdatatestsite?path=/Home/todos

GET /feeds/content/site/gdatatestsite?parent=301348189113428

GET /feeds/content/site/gdatatestsite
?include-drafts=true&include-deleted=true

Fetching Content

```
URL contentFeedUri = new URL(
    "https://sites.google.com/feeds/content/site/gdatatestsite" +
    "?kind=filecabinet,listpage");
```

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URL contentFeedUri = new URL(
    "https://sites.google.com/feeds/content/site/gdatatestsite" +
    "?kind=filecabinet,listpage");

ContentFeed feed = client.getFeed(contentFeedUri, ContentFeed.class);
```

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    "https://sites.google.com/feeds/content/site/gdatatestsite" +
    "?kind=filecabinet,listpage");

ContentFeed feed = client.getFeed(contentFeedUri, ContentFeed.class);

System.out.println("Listing all file cabinets on site:");
for (FileCabinetPageEntry entry :
     feed.getEntries(FileCabinetPageEntry.class)) {
  System.out.println("Title: " + entry.getTitle().getPlainText());
  System.out.println("Revision#: " + entry.getRevision().getValue());
}
```

Fetching Content

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URL contentFeedUri = new URL(
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  System.out.println("Revision#: " + entry.getRevision().getValue());
}

System.out.println("Listing all list pages on site:");
for (ListPageEntry entry : feed.getEntries(ListPageEntry.class)) {
  System.out.println("Title: " + entry.getTitle().getPlainText());
  System.out.println("id: " + getEntryId(entry));
  for (Column col : entry.getData().getColumns()) {
    System.out.println(
        "[" + col.getIndex() + "] " + col.getName() + "\t");
  }
}
```

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Demo

Demo

End to End: creating a site from scratch

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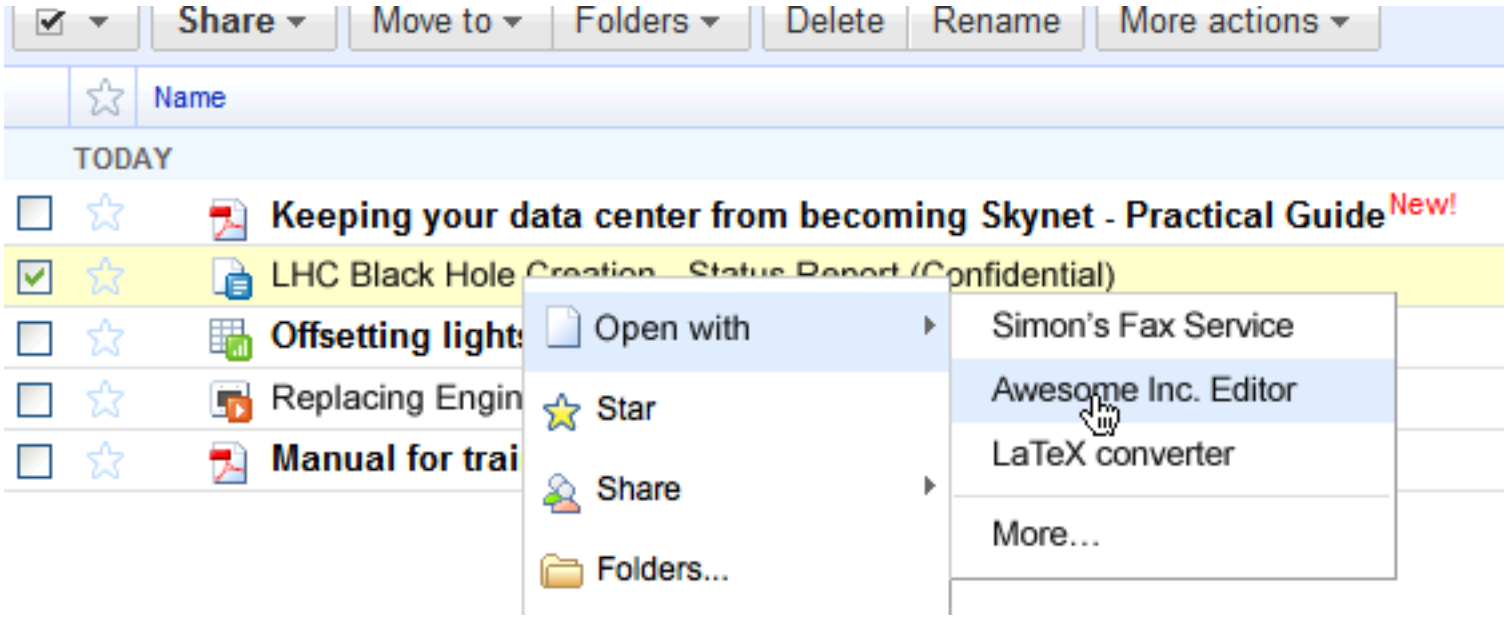
So what can *YOU* build with them...?

Google Apps Marketplace

Google Apps Marketplace

Context Menu Integration



Google Docs - Moving Forward

- "Why would your Docs ever leave the cloud?"
  - Create, store, share in the cloud
  - Access from anywhere and any device
- Anyone can play in the cloud
  - New Web and Client Apps
  - Even legacy apps and legacy operating and file systems
- Sharing
  - Collaboration is king
- Google Docs
  - Getting better and better

Google Sites Moving Forward

- Workspaces
  - Publishing workflow
  - Deeper integration with Docs
- Themes
  - CSS based themes
  - Improved theme re-use
- Extensibility
  - Continued evolution of the Gadget API
  - Access to advanced site configuration via API
  - Event driven code execution
  - Dynamic page rendering
  - Support for client side JavaScript

View live notes and ask questions about this session on Google Wave

http://bit.ly/bp2sTC

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Resources

DocList API
- documentation: http://code.google.com/apis/documents/- libraries & code samples: http://code.google.com/apis/documents/code.html
Sites API
- documentation: http://code.google.com/apis/sites- libraries & code samples: http://code.google.com/apis/sites/code.html
Live demos: googlecodesamples.com

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